

REMARKS

Applicants thank the Examiner for the careful consideration given to this application. Applicants now respectfully request reconsideration of this application in view of the above amendments and the following remarks.

Claims 1-51 are now pending in this application. Claims 1, 12, 18, 29, 35, and 46 are independent claims. Claims 10, 12, 14, 16, 18, 27, 29, 31, and 33 have been amended. Claims 35-51 have been added. No new matter has been added.

Applicants have amended Claims 1, 10, 12, 14, 16, 27, 29, 31, and 33 to address various minor grammatical errors (in Claims 12 and 29) and/or to change to preferred wordings (Claims 1, 10, 14, 16, 18, 27, 31, and 33). It is respectfully submitted that these amendments do not narrow the respective scopes of these claims.

With regard to Claims 10 and 27 (and also relating to the language of new Claim 44), language of “at least one of b) and c)” has been changed to “at least one of b) or c)” (or, in the case of new Claim 44, this is the type of language used in this new claim). The language is intended to cover all three cases: (i) b); (ii) c); and (iii) both b) and c). The purpose of these amendments is not related to patentability; rather, it is to provide language that avoids the narrow claim construction of the former type of language as found in *SuperGuide Corporation v. DirecTV Enterprises, Inc., et al.*, 358 F.3d 870 (Fed. Cir. 2004) (where language of the type “at least one of A, B, C, and D” was construed as requiring at least one of each of A, B, C, and D). Although this construction was contrary to years of patent practice, this remains applicable law unless the claim construction of *Superguide* is later overturned. It is further noted, in view of this construction, that this is actually a *broadening* amendment, and hence, (in addition to the fact that this is unrelated to patentability) no *Festo* presumption of surrender should apply.

Allowable Subject Matter

Applicants note with appreciation the Examiner’s indication that Claims 8-11, 13-17, 25-28 and 30-34 would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims. Applicants opt not to do so at this time.

Rejections under 35 U.S.C. §102

Claims 1-7, 12, 18-24 and 29 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,650,762 (“Gibson et al.”). These rejections are respectfully traversed for at least the following reasons.

Claim 1 reads as follows:

A method, comprising:
producing a histogram from a pixel domain image, the histogram establishing a relationship of possible pixel values versus respective aggregate numbers of pixels of the pixel domain image having such pixel values;
modifying some of the pixel values of the pixel domain image to shift a portion of the histogram such that there no longer exists an aggregate number of pixels having a first possible pixel value; and
modifying some of the pixel values of the pixel domain image such that an aggregate number of pixels exist having the first possible pixel value, where the aggregate number of pixels is a function of data to be hidden.

Claim 12 reads as follows:

A method of decoding a pixel domain image containing hidden data, the pixel domain image having been encoded with the hidden data by (i) producing a histogram, the histogram establishing a relationship of possible pixel values versus respective aggregate numbers of pixels of the pixel domain image having such pixel values; (ii) modifying some of the pixel values of the pixel domain image to shift a portion of the histogram such that there no longer exists an aggregate number of pixels having a first possible pixel value; and (iii) modifying some of the pixel values of the pixel domain image such that an aggregate number of pixels exist having the first possible pixel value, where the aggregate number of pixels is a function of the hidden data, the method comprising:
using the modified pixel values of the pixel domain image having the first possible pixel value to recover at least a portion of the hidden data.

It is noted that the other independent claims contain recitations similar to Claims 1 and 12, so even though the following discussion specifically discusses these claims, it is intended that the discussion applies to the other corresponding independent claims, as well.

The Office Action asserts that Gibson et al. anticipates all of the independent claims. Applicants respectfully disagree. The Office Action, at page 2, asserts that Gibson et al. discloses the subject matter of Claims 1 and 18 in Figure 3 and at col. 10, lines 44-51 and 56-59 and at col. 12, lines 1-4. Figure 3 and col. 10, lines 44-51 describe a process used by Gibson et al. to characterize a modulated codeword based on taking histograms of the sample values, thus

resulting in classifying a codeword into “types.” Col. 10, lines 56-59 discusses that modifications of the types may be used to embed data. It is initially noted that this passage discusses using modified types to represent embedded data, but it fails to discuss how the types are modified to embed data. However, it is noted that the other cited passage, col. 12, lines 1-4, discusses the use of a “modulated/shifted type” with embedded information. This still, however, fails to disclose all of the claimed subject matter of Claim 1.

First, Claim 1 includes, “modifying some of the pixel values of the pixel domain image to shift a portion of the histogram *such that there no longer exists an aggregate number of pixels having a first possible pixel value.*” (Emphasis added.) None of the cited portions of Gibson et al. discusses shifting the histogram so as to “clear out” a pixel value (i.e., “first possible pixel value”).

Second, following the recitation quoted in the preceding paragraph, Claim 1 goes on to recite, “*modifying some of the pixel values of the pixel domain image such that an aggregate number of pixels exist having the first possible pixel value*, where the aggregate number of pixels is a function of the data to be hidden.” (Emphasis added.) Even though Gibson et al. does, as noted above, discuss shifting of a histogram (i.e., a “type”), Gibson et al. does not modify pixel values in order to obtain pixel values having the “cleared out” pixel value (i.e., “the first possible pixel value”), in accordance with the data to be embedded, as claimed. In contrast, as shown and discussed in Figs. 8-9 of Gibson et al., data is embedded according to Gibson et al. merely by shifting the “types,” rather than by shifting a histogram and then modifying values of various pixels.

Finally, nowhere in Gibson et al. are pixels and images even mentioned, much less used in the disclosed techniques. In contrast, Claim 1 specifically recites the use of pixel values of images.

For at least these reasons, it is respectfully submitted that Gibson et al. fails to anticipate Claim 1 or any claim that depends from Claim 1. Similarly, Gibson et al. also fails to anticipate Claims 18 or 35 or any of their dependent claims.

Turning now to Claim 12 and similar claims (Claims 29 and 46), the Office Action further cites Gibson et al. at col. 13, lines 48-64 and lines 64-67 (presumably, in addition to the

previously-cited portions of Gibson et al.). It is initially noted that Claims 12 (and the similar independent claims) all incorporate the method of Claim 1, and therefore, the above discussion applies here, as well, and Claims 12, 29, and 46 are allowable for at least those reasons.

Additionally, Claim 12 recites, “using the modified pixel values of the pixel domain image having the first possible pixel value to recover at least a portion of the hidden data.” The passage at col. 13, lines 48-67 addresses the recovery of data embedded using the type-shifting method of Gibson et al. As discussed in this passage, the decoder in Gibson et al. uses a minimum-entropy approach based, not on specific values of a particular histogram position, but on the received type, as a whole. This is made clear by considering Fig. 9 of Gibson et al., particularly S610. Again, it is shown here that the data is embedded in the nature of the shifted type and that the embedded data is recovered by detecting the nature/degree of the shift. Therefore, it is respectfully submitted that the method of Gibson et al. does not include anything corresponding to “using the modified pixel values . . . having the first possible pixel value to recover . . . hidden data.”

For at least these further reasons, it is respectfully submitted that Claims 12, 29, and 46, and all claims that depend from these claims, are not anticipated by Gibson et al. and are allowable.

New Claims

New Claims 35-51 have been added. These claims are computer-readable medium claims that parallel Claims 1-17 and also find support in multiple portions of the specification (for example, but not limited to, paragraph [0017]). It is respectfully submitted that these claims are allowable for at least the same reasons for which Claims 1-17 are allowable.

Disclaimer

Applicants may not have presented all possible arguments or have refuted the characterizations of either the claims or the prior art as found in the Office Action. However, the lack of such arguments or refutations is not intended to act as a waiver of such arguments or as concurrence with such characterizations.

CONCLUSION

Applicants believe that the above remarks address all of the grounds for rejection and place the application in condition for allowance. Applicants, therefore, respectfully request prompt and favorable consideration of this Amendment and reconsideration of this application.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone the undersigned at the number provided.

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Respectfully submitted,

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